411th BSB Heidelberg

SOLID WASTE MANAGEMENT PLAN (SWMP)

[Date of Final Plan]

[NOTE TO PLAN WRITER: Throughout this template are blank spaces and optional entries that must be modified (i.e., completed, reserved, or deleted) to appropriately present BSB-specific information. These are indicated by highlighted bracketed entries [ ]. All highlighted bracketed entries and all sections designated NOTE TO PLAN WRITER, including this note, must be cleared before finalization of the BSB-specific plans. In many cases, several options are presented in the template. Make sure to delete all wording that does not apply prior to finalization of the plan. If necessary, the standard text of this template may also be modified to adequately address particular or unique BSB circumstances. Throughout the template where [BSB] appears, the plan writer should fill in the name of the BSB (for example 411th BSB, Heidelberg) or ASG if their installation is an ASG and not a BSB (for example 6th ASG, Stuttgart). To preserve its original format and content, the template should be saved and a copy used to develop the installation-specific SWMP.

Throughout this template, electronic links to cross-referenced items are highlighted in blue. The writer can click on these links to easily navigate through the document. Note that any modification to this template that involves deletion of a cross-referenced item (table, appendix, etc.) will result in the appearance of an error message where the reference appears in the text.]

APPROVALS

This Solid Waste Management Plan (SWMP) addresses management requirements specific to current and planned waste generation and disposal activities at the 411th BSB Heidelberg..

This SWMP satisfies the requirement to develop and maintain a Solid Waste Management Plan contained in Section C7.3.3 of the Final Governing Standards (FGS) for Germany and the USAREUR Separate or Recycle Trash (SORT) Program. This SWMP must be reviewed and updated at least once every 5 years.

Prepared By:

_____ _____

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Date

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[Name of BSB Waste Management Officer]
BSB Waste Management Officer
Environmental Management Office

Date

411TH BSB HEIDELBERG SOLID WASTE MANAGEMENT PLAN

RECORD OF REVISIONS

The SWMP is reviewed and updated at least once every 5 years. The plan is also updated in the event of a major demographic change at the BSB such as a significant permanent troop movement. A record of these revisions is maintained in the following table.

Revision No.	Date	Name and Title	Signature	Pages Affected
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
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APPENDICES

LIST OF TABLES

1 INTRODUCTION

This Solid Waste Management Plan (SWMP) is developed for current and planned solid waste collection, storage, and disposal facilities and programs at the 411th BSB Heidelberg Special emphasis is placed on coordination of the recycling and collection programs and compliance with German law. Responsibility for development, maintenance, and implementation of the SWMP lies within the BSB's Environmental Management Office (EMO) and Directorate of Public Works (DPW) Utilities, Operations and Maintenance (O&M).

1.1 PURPOSE

The purpose of this SWMP is to identify the policies and procedures for the reduction, collection, storage, transportation, and disposal of solid waste. This plan also provides a detailed description of the collection program for compliance with USAREUR Separate or Recycle Trash (SORT) criteria and the waste reduction goals of Germany. This SWMP satisfies the criteria for a solid waste management strategy as identified in Section C7.3.3 of the Final Governing Standards (FGS) for Germany (August 2002).

[NOTE TO PLAN WRITER: Ongoing inspections must be performed to assess compliance with the provisions of this SWMP. The sample compliance plan table in Appendix 9 may be used to facilitate this process.]

1.2 COOPERATION WITH GERMAN OFFICIALS AND REGULATIONS

[NOTE TO PLAN WRITER: The county or city in which the BSB resides typically employs its own system of waste removal, which the BSB utilizes in accordance with German law. The individual managing the contract from the City then becomes the sole local official contact for the purpose of this section. If this is not the case, list the officials from the German City or State that oversee BSB compliance with German regulations.]

The BSB cooperates with the Amt für Abfallwirtschaft und Stadtreinigung of the city of Heidelberg concerning all matters of solid waste reduction and disposal. The point of contact for the US Depot in Germersheim is the Kreisverwaltung (county administration) Germersheim. Table 1-1 provides a listing of local German government contacts for solid waste:

Table 1-1. German Regulatory Agency Contacts – Solid Waste

Description	Name / Title	Agency
Primary Contact	Herr P. Schroth	Amt für Abfallwirtschaft, Stadt Heidelberg
Secondary Contact	Herr Wast	Kreisverwaltung Germersheim
Additional Contact		

1.3 COORDINATION WITH OTHER PLANS

For effective overall pollution prevention, the SWMP is coordinated with the Hazardous Waste Management Plan (HWMP) regarding Special Waste (waste oil and batteries), Household Hazardous Waste, and the requirement for an appointed Waste Management Officer. The SWMP also complies with the 411th BSB's Storm Water Pollution Prevention Plan (SWPPP) requirements regarding the design and placement of all solid waste storage areas.

[NOTE TO PLAN WRITER: Throughout this SWMP, all subsequent citations from the FGS for Germany are simply referred to as the "FGS." In addition, it should be noted that the nomenclature for FGS section numbers includes a reference to both the FGS chapter and paragraph (e.g., FGS Section C7.3.2 refers to FGS Chapter 7, Paragraph 7.3.2).]

2 KEY PERSONNEL

[NOTE TO PLAN WRITER: The following section details the BSB's key solid waste management personnel. Ensure that Table 2-2 is updated, as necessary, to provide contact information for key personnel.]

2.1 WASTE MANAGEMENT OFFICER *(BETRIEBSBEAUFTRAGTER FÜR ABFALL)*

In accordance with FGS Section C7.3.19.3, a Waste Management Officer (WMO) must be appointed if specific activities are conducted at the BSB. Table 2-1 identifies solid waste management activities performed at this installation.

Table 2-1. BSB Solid Waste Management Activities

Solid Waste Activity	Yes	No
Landfill		**X**
Stationary waste disposal facility with a throughput of more than 0.75 metric tons per hour, including incinerator and composting facilities		**X**
Stationary waste disposal facility for the chemical or physical treatment of waste with a throughput of more than 0.5 metric tons per hour		**X**
Stationary waste disposal facilities for the incineration of medical waste		**X**
Storage or treatment of scrap vehicles (site larger than 4,000 m^2)		**X**
Hospital and/or clinic	**X**	
Facilities where hazardous waste is generated on a regular basis		**X**

[NOTE TO PLAN WRITER: If any of the activities listed in Table 2-1 occur at the BSB, check if a Waste Management Officer has already been appointed for hazardous waste. If yes, additional appointments are not required. If no, appoint a Waste Management Officer and proceed to the following paragraphs.]

[NOTE TO PLAN WRITER: If none of the activities listed in Table 2-1 occur at the BSB, review the BSB's Hazardous Waste Management Plan to determine if a Waste Management Officer must be appointed for hazardous waste activities. If a Waste Management Officer is not required under either plan, delete this entire section with exception of the title and the following sentence.]

A WMO is not yet appointed at the BSB. The only activity requiring a WMO is waste generation at hospitals and clinics. Hospitals and clinics have their own contracts for clinic waste disposal independent of the BSB DPW. Under this aspect, the WMO could be located at the Medical Command. Alternatively, he could be with the BSB DPW Environmental Management Office as the organization within the BSB being responsible for all activities with a potential impact to the environment.

[NOTE TO PLAN WRITER: If the BSB is required to appoint a Waste Management Officer in accordance with FGS Chapters 6 or 7, delete the previous sentence and add the appropriate WMO contact information to Table 2-2. If appointment of WMO is not required, delete the following bullet points and the WMO row of Table 2-2.]

The responsibilities of a WMO are described below.

- To monitor the path of waste, from its occurrence or delivery to its recycling or disposal;
- To monitor compliance by conducting inspections at regular intervals of facility operations and the type and nature of waste produced, recycled, or disposed;
- To provide information concerning detected deficiencies to the installation commander;
- To implement measures to correct these deficiencies;
- To inform the installation commander of any detrimental effect that could result from the waste management and measures to minimize the negative impacts;
- To advocate (in permitted facilities) the development and introduction of environmentally compatible, low waste-producing products, including procedures for reuse, recycling, and disposal of these products;
- To cooperate in the development and introduction of standard operating procedures, especially by studying the relevant processes and products using criteria of closed substance cycle waste management and disposal; and
- To submit an annual report to the installation commander concerning the measures taken and planned with respect to WMO duties.

Contact information for this individual is provided in Table 2-2.

2.2 SORT PROGRAM COORDINATOR

[NOTE TO PLAN WRITER: The SORT Program Coordinator should already be in place. If the Coordinator position is vacant, one must be appointed.]

The SORT Program Coordinator is responsible for overseeing all SORT programs and enforcement. The SORT Coordinator operates directly under the Directorate of Public Works (DPW) and works in conjunction with Environmental and Utilities staff.

2.3 LISTING OF KEY PERSONNEL

Key BSB waste management personnel are listed in Table 2-2. The contact information contained herein is updated, as appropriate, to reflect modifications in BSB operations.

[NOTE TO PLAN WRITER: Complete Table 2-2 by entering required contact information and adding or deleting rows, as appropriate. Ensure that the table is updated, as necessary, to reflect modifications in the BSB's operations.]

Table 2-2. Key BSB Waste Management Personnel

Position/Task	Name	Telephone Number (Commercial) DSN	E-mail Address
Personnel Responsible for Solid Waste	EMO Dan Welsh O&M Travis Vowinkel Contracting Jürgen Baller	(06221-4380-) 387-3140 (06221-4380-) 387-3180 (06221-4380-) 387-3150	Daniel.Welch@bsbdpw.heidelberg.army.mil Travis.Vowinkel@bsbdpw.heidelberg.army.mil
Waste Management Officer			
Maintenance of Disposal Records	Travis Vowinkel	(06221-4380-) 387-3180	Travis.Vowinkel@bsbdpw.heidelberg.army.mil
SORT Program Coordinator	Bernd Rau	(06221-4380-) 387-3217	

3 WASTE REDUCTION AND RECYCLING PLAN

This section provides a brief overview of the waste reduction and recycling plan as a whole. Detailed descriptions of the mechanics of these programs are provided in other sections of the SWMP, and links are provided to these sections where applicable.

3.1 EDUCATION

The BSB continues to implement waste reduction programs and focuses on efforts to provide education to tenants (such as the Exchange) and non-resident personnel. More detailed information on this program is included in Appendix 2.

3.2 REDUCTION

The BSB implements the following efforts to maximize waste reduction efforts.

[NOTE TO PLAN WRITER: Delete items from the following list that are not applicable to your BSB and replace with information specific to your waste reduction program.]

1. The EMO works with the PX contractor on Environmentally Preferable Purchasing (EPP) as per Appendix 2.

2. The BSB Director of Contracting uses EPP as a criterion in purchasing decisions.

3. The BSB works with local charities such as the German Red Cross (*Deutsches Rotes Kreuz* – DRK) for reuse of furniture, clothing, and other bulky items.

4. The BSB offers thrift shops for BSB internal sale. Prize-based incentive programs are limited to internal activities because of legal limitations i.e. custom duty.

[NOTE TO PLAN WRITER: Coordinate with the Director of Contracting prior to including #6.]

3.3 RECYCLING

The BSB continues to implement a recycling program to focus on opportunities to reduce the volume of waste disposed by emphasizing waste reduction, reuse, and/or recycling. Recyclable construction debris is collected separately from other wastes, and is reused as construction material following treatment and preparation. Only contaminated construction debris is disposed of permanently. In addition, recycling/composting of biodegradable wastes (yard waste, certain plastics, and biological waste) is prioritized with respect to landfilling. Listed below are specific practices that the BSB is implementing as part of its recycling program.

1. **Single Family Homes -** The BSB has a source-separated recycling program in place for home (curbside) collection (see details in Section 4.1).

2. **Multi-Family Housing -** The BSB provides convenience center collection for residents of multi-family housing (see details in Section 4.2) with a goal of one recycling island per stair well by 2006.

3. **Barracks and Buildings -** The BSB increased the number of convenience centers serving residents and workers in barracks and buildings with a target of one center per floor by 2009 (see details in Section 4.4).

4. **Yard Waste -** The BSB provides collection of yard waste in containers for compostable waste, which are generally picked up once a week (exceptions Edingen Radio Relay Station and Germersheim). (see details Section 4.3).

5. **Yard Waste -** The BSB provides centralized yard waste collection at the recycling center (see details Section 4.3).

6. **Bulky Items -** The BSB provides a collection point for unusable bulky white goods and will maintain a contract for transport of these materials for recycling (see details Section 4.8 and Section 4.9).

7. **Materials Processing Facility -** A centralized Materials Processing Facility (MPF) is neither existing nor planned for the BSB, however transportable paper compactors are provided at locations with major waste paper or cardboard generation (Patton Barracks, Commercial Area, Hospital)

3.4 GOALS

[NOTE TO PLAN WRITER: Utilize the goals set for your SORT Program and the information from your previous Solid Waste Annual Reports (SWARs) to complete this section. If the format of this section is markedly different from that in your SORT Program, delete the following tables and replace with the SORT goals. Table cells in white are to be filled with information generated from the SWARs; shaded cells are goal numbers that can either be taken from SORT program goals or newly set as a part of this plan.]

Table 3-1. Goals for Reduction of Rubbish Generated Per Person

Parameter	Prior Year (1)	Base Year (2)	Base Year +1	Base Year +2	Base Year +3	Base Year +4	Base Year +5
	2002	2003	2004	2005	2006	2007	2008
Tons of Rubbish Generated (3)	12,010.66	6,450.20	Not specified				
BSB Population (4)	7,965	18,965					
Annual Rubbish Generation per Person (tons)	1.51	0.34					

Notes:
1 Prior Year is the year prior to the Base Year.
2 Base Year is the most recent complete Solid Waste Annual Report (SWAR) year.
3 Rubbish is defined as all waste that is landfilled or incinerated.
4 Total military and civilian population, both resident and non-resident (SWAR Section 1.2)

Table 3-2. Goals for Increased Recycling Rates

Parameter	Prior Year [1]	Base Year [2]	Base Year+1	Base Year+2	Base Year+3	Base Year+4	Base Year+5
	2002	2003	2004	2005	2006	2007	2008
Tons Recycled [3]	5,181.66	15,986.02	Maintain USAREUR goal of 60% recyclable and 40% rubbish.				
BSB Population [4]	7,965	18,965					
Tons Recycled per Person	0.65	0.84					
Recycling (Diversion) Rate[5]	0.30 (30.1%)	0.71 (71.3%)					

Notes:

1 Prior Year is the year immediately preceding the Base Year.
2 Base Year is the most recent complete Solid Waste Annual Report (SWAR) year.
3 Recyclables are defined as wastes that are reused, recycled, or composted for reuse (this includes *Duales System Deustchland* [DSD]). Use total as reported in the most recent complete SWAR, Section 2.11.
4 Total military and civilian population, both resident and non-resident (SWAR Section 1.2)
5 Recycling (Diversion) Rate = (Tons Recycled)/(Tons Rubbish + Tons Recycled). Use the recycling tonnage as reported in the first row of this table and the rubbish tonnage as reported in Table 3-1.

Table 3-3. Goals for Reduced Waste Management Costs

Parameter	Prior Year [2]	Base Year [3]	Base Year +1	Base Year +2	Base Year +3	Base Year +4	Base Year +5
	2002	2003	2004	2005	2006	2007	2008
Total Cost for Disposal [1]	2,357,379	6,930,866	Not specified				
Total Waste Generated (tons)	17,192.32	22,436.22					
Unit Cost ($/ton)	137.12	308.91					

Notes:

1 All costs associated with solid waste management (collection, transportation, disposal).
2 Prior Year is the year immediately preceding the Base Year.
3 Base Year is the most recent complete Solid Waste Annual Report year.

Table 3-4. IMA-EURO Goals for Container Volume per Capita

Generator Type / Location	Rubbish [1]		Recyclables [1]	
	Goal	Actual [2003] [2]	Goal	Actual [2003] [2]
Housing/Barracks	30 L/pp-wk	59.2 L/pp-wk	60 L/pp-wk	32.9 L/pp-wk
Office/Administrative	10 L/pp-wk	64.0 L/pp-wk	25 L/pp-wk	34.0 L/pp-wk
Total	-	123.2 L/pp-wk	-	66.9 L/pp-wk[3]
Waste Production	-	36.3 L/pp-wk[4]	-	66.3 L/pp-wk[5]
Commercial	No standard, handled on a case-by-case basis	Data not available	No standard, handled on a case-by-case basis	Data not available

Notes:

1 Container volume reported as liters per person per week (L/pp-wk)
2 Actual rate achieved for the year entered.
3 Paper/Cardboards, DSD, Compost container volume
4 Total Rubbish 35,834.43 m^3/a devided by total population 18,965
5 Recyclables 65,430.01 m^3/a devided by total population 18,965

4 WASTE COLLECTION

[NOTE TO PLAN WRITER: Review Appendix 7 prior to initiating this section.]

4.1 HOME (CURBSIDE) COLLECTION

[NOTE TO PLAN WRITER: Use this paragraph if the BSB will be continuing an existing curbside collection service.]

The BSB provides curbside or home collection service to approximately 330 residences located in 1 area in the north part of Patrick Henry Village. Rubbish containers from each residence are picked up once a week. Recycables like Paper and Compost are also picked up once a week. Waste is required to be source-separated into rubbish, compostables, paper and cardboard and glass. This service is performed by the Amt für Abfallwirtschaft und Stadtreinigung of the city of Heidelberg and requires 3 trucks and approximately 3 labor hours per week. The curbside collection program is the responsibility of Travis Vowinkel .

[NOTE TO PLAN WRITER: Provide additional information below to describe plans for either modifying the existing system or initiating a new system. It is recommended that the writer copy the previous paragraph and revise to best reflect any plans for a new or modified system.]

4.2 RECYCLING ISLAND (CONVENIENCE CENTER) COLLECTION

The Heidelberg BSB uses the term Recycling Islands for collection points assigned as convenience centers in the template for the SWMP. Both terms are used synonymous in this plan.

[NOTE TO PLAN WRITER: Convenience centers are also known as waste collection points or recycling islands.]

[NOTE TO PLAN WRITER: Use the following paragraph if the BSB will continue an existing convenience center program with no changes.]

The BSB provides collection service in 14 areas or villages on the base through the use of 182 convenience centers. The centers are listed in Appendix 7 table A-7.1and are shown on the maps in Appendix 1. Each center provides containers for rubbish, compostables, DSD, paper and cardboard. Most centers are fenced and locked, only accessible for assigned residents and service personnel .

[NOTE TO PLAN WRITER: Provide additional information below to describe plans for either modifying the existing convenience center program or implementing a new program. Refer to the worksheets in Appendix 7 for assistance in modifying an existing or initiating a new convenience center collection system. It is recommended that the writer copy the previous paragraph and revise to best reflect any plans for a new or modified program.]

4.3 YARD WASTE COLLECTION

[NOTE TO PLAN WRITER: Select the paragraph that best describes the BSB yard waste collection system.]

Yard waste collection is provided in the months of spring and fall. Yard waste is also collected at convenience centers and is picked up once a week. In addition, yard waste pick-up occurs when a request is made. Yard waste is transported to the Kompostwerk Wieblingen, Mittelgewannweg for composting. Yard waste collection and transportation is contracted to the Amt für Abfallwirt-schaft und Stadtreinigung of the city of Heidelberg.

4.4 BARRACKS AND BUILDING COLLECTION

[NOTE TO PLAN WRITER: It is recommended that all significant buildings be served by at least one convenience center. In locating centers, 100 meters should be considered the maximum walking distance from any building served to the convenience center. This distance is shorter than the residential value, because office-related waste tends to have a higher percentage of paper and other heavier waste streams.]

[NOTE TO PLAN WRITER: Add the following paragraph if larger buildings have internal waste collection points.]

Waste is hauled daily from each internal collection point to Convenience Centers. Responsibility for the hauling and maintenance of the internal collection areas rests with the contracted cleaning service.

[NOTE TO PLAN WRITER: Use the following paragraph if the BSB will be continuing an existing collection program with no changes.]

The BSB provides collection service to 141 barracks and buildings on the base through the use of 41 convenience centers. The centers are listed in Table 4-1 and shown on maps in Appendix 1. Each center serves an average of 3.44 buildings and provides containers for rubbish, compostables, DSD, paper and cardboard; sometimes for glass. The centers are not fenced and not locked.

[NOTE TO PLAN WRITER: Provide additional information below to describe plans for either modifying the existing system or initiating a new system. It is recommended that the writer copy the previous paragraph and revise to best reflect any plans for a new or modified system.]

Table 4-1. Convenience Center Locations for Barracks and Buildings

Convenience Center ID	ARLOC	Installation Name	Building Numbers Served	Number of Personnel Served
1	GE12F	Campbell Barracks	19, 20, 28, 31	
3	GE12F	Campbell Barracks	25, 32, 37-40	

Convenience Center ID	ARLOC	Installation Name	Building Numbers Served	Number of Personnel Served
7	GE12F	Campbell Barracks	9, 13	
8	GE12F	Campbell Barracks	15, 16	
9	GE12F	Campbell Barracks	3, 4, 7, 63	
2	GE33	Hammonds Barracks	972, 973	
4	GE33	Hammonds Barracks	974, 977	
5	GE33	Hammonds Barracks	968-970	
1	GE34F	Heidelberg Golf Course	4102, 4108	
5	GE34G	Heidelberg Hospital	3603, 3608, 3610-3612, 3622-3625, 3628	
1	GE34J	Community Support Center	3961, 3962, 3981, 3985, 3986, 3990	
6	GE34J	Community Support Center	3983, 3984	
15	GE34J	Community Support Center	3979, 3980	
1	GE35B	Heidelberg Airfield	201, 210	
2	GE35B	Heidelberg Airfiled	209, 225	
1	GE45D	Kilbourne Kaserne	4302-4308, 4311-4320, 4350	
1	GE52L	Mark Twain Village	3654	
56	GE52L	Mark Twain Village	3796	
57	GE52L	Mark Twain Village	3796	
62	GE52L	Mark Twain Village	3797	
1	GE62S	Small Arms Range	4130	
42	GE654	Patrick Henry Village	4493, 4498, 4499, 4790-4793, 4800	
65	GE654	Patrick Henry Village	4509, 4510	
69	GE654	Patrick Henry Village	4501, 4504	
70	GE654	Patrick Henry Village	4547	

Convenience Center ID	ARLOC	Installation Name	Building Numbers Served	Number of Personnel Served
71	GE654	Patrick Henry Village	4544	
79	GE654	Patrick Henry Village	4796	
80	GE654	Patrick Henry Village	4539	
81	GE654	Patrick Henry Village	4507, 4533	
91	GE654	Patrick Henry Village	4511	
8	GE658	Patton Barracks	104, 107, 108	
12	GE658	Patton Barracks	3854, 156, 157, 141, 3852, 3856	
2	GE76P	STEM	1000-1004, 1006-1008, 1012-1014, 1019	
1	GE846	Tompkins Barracks	4219, 4222, 4241	
4	GE846	Tompkins Barracks	4251, 4252, 4260	
6	GE846	Tompkins Barracks	4266, 4267, 4278	
11	GE846	Tompkins Barracks	4242	
12	GE846	Tompkins Barracks	4223	
13	GE846	Tompkins Barracks	4237, 4243, 4253, 4254	
14	GE846	Tompkins Barracks	4225, 4226, 4234-4236	
15	GE846	Tompkins Barracks	4213-4218	

US Army Depot Germersheim

Rubbish is collected in containers distributed on an “as needed” pattern covering the whole area. The recyclables paper/cardboard, wood, treated wood and three types of plastic are collected at a single SORT center operated by Facility Engineering (see section 4.5). Facility Engineering uses the service of the county of Germersheim for transportation and disposal. Untreated wood is shredded and composted. The two hosted organizations DeCA and DDDE use the SORT center only for waste wood, but have their own separate contracts for disposal of waste paper/cardboard and plastics. DDDE collects paper and plastic at two collection points per ware house using internal truck traffic for transportation to 34 m3 containers provided by their contractor.

4.5 CENTRALIZED COMMUNITY RECYCLING CENTERS

[NOTE TO PLAN WRITER: It is recommended that the BSB provide at least one Centralized Community Recycling Center to serve non-residents and to function as a waste oil and battery drop-off location. Depending on the size and layout of the BSB, more than one Centralized Community Recycling Center may be warranted. Revise the following paragraph to best reflect any plans for new or modified Centralized Recycling Centers at the BSB.]

The BSB provides one Centralized Community Recycling Center, called SORT-center, located in Patrick Henry Village, which may also be used as collection points for household hazardous waste (HHW) and for overflow of recyclables from housing/barracks. This facility is fenced, gated, and staffed during operating hours (Mon-Fri from 8:00-12:00, 13:00-16:00 and Sat from 8:00-13:00) and provides collection for the following waste streams:

- Tires
- Compostable Materials
- Paper and Cardboard
- DSD Recyclables
- Glass
- Plastic
- Cork
- Styrofoam
- Cans
- Hazardous Waste
- Metals
- Yard Waste
- Waste Oil
- Batteries
- White Goods, Bulky Items
- DRK or other Charity Drop-off Box
- Electronical Waste
- Flat Glass
- Wood
- c&d debris

The facility is operated under contract with the Amt für Abfallwirtschaft und Stadtreinigung of the city of Heidelberg and requires 40 labor hours per week to maintain. Centralized recycling center locations are depicted on the BSB maps included in Appendix 1 and are listed below in Table 4-2.

The BSB provides another SORT-center located in Germersheim Army Depot, which is also fenced, gated and staffed during operating hours (Fri from 7:00 to 12:00) and provides collection for following waste streams:

- Paper/Cardboard
- Untreated Wood
- Treated wood
- Plastic foil
- Styrofoam
- Dure plastic

The facility is operated under contract with the Kreisverwaltung Germersheim and requires 5 labor hours per week to maintain. Centralized recycling center locations are depicted on the BSB maps included in Appendix 1 and are listed below in Table 4-2

Table 4-2. Locations of Centralized Community Recycling Centers

Community Recycling Center	ARLOC	Service Area
SORT-Center	*GE 654*	*All on-post residents of 411th BSB Heidelberg*
SORT-Center	*GE30J*	*Industrial waste streams of Germersheim Army Depot*

4.6 COLLECTION FROM SIGNIFICANT GENERATORS

The BSB has no significant waste generators being responsible for 5% or more of the overall BSB wastes or being responsible for 5% or more of the generation of a single waste stream, presenting unique waste collection challenges or facilities with separately contracted waste collection systems.

4.7 SPECIAL WASTE – WASTE OIL AND BATTERIES

[NOTE TO PLAN WRITER: This requirement is related to hazardous waste management. If a hazardous waste management plan exists, review it before completing this section.]

[NOTE TO PLAN WRITER: It is strongly encouraged that each BSB provide at least one area for BSB residents to drop off waste oil and batteries on a regular basis. It is further recommended that Convenience Centers not be used for this function, as it would create the need to catalog them as Hazardous Waste Accumulation Points under the Hazardous Waste Management Plan.]

The BSB provides waste oil and battery collection at the location listed in . These facilities are fenced, gated, and staffed during operating hours, and secured during non-operating hours. They meet or exceed all of the requirements for a Hazardous Waste Accumulation Point (HWAP) from FGS Section C6.3.2 and the BSB's Hazardous Waste Management Plan (HWMP). All transportation and hauling of these wastes meet or exceed the requirements set forth in FGS Sections 6.3.12 and Section 6.3.13, and the BSB's HWMP.

Table 4-3. Waste Oil and Battery Collection Locations

Name or ID of facility	ARLOC	Operating Hours
SORT-Center, Patrick Henry Village	*GE 654*	*8:00-12:00; 13:00-16:00 (Mon-Fri)* *8:00-13:00 (Sat)*

The operating hours for the above collection are 5.5 days per week, 52 weeks per year. This collection is provided under contract with the Amt für Abfallwirtschaft und Stadtreinigung of the city of Heidelberg and requires 40 labor hours per week.

4.8 BULKY WASTE, WHITE GOODS, AND FURNITURE WASTE

The BSB provides a collection facility for furniture, bulky items, and white goods.

[NOTE TO PLAN WRITER: It is recommended that the BSB provide a waste collection area for white goods, bulky goods, and furniture. Issues to consider in planning for this facility are identified below.

- *A primary goal of such a facility is to provide for the re-use of furniture and other items by BSB personnel. If this is the case, the facility must provide protected storage for the items, it must be easily accessible and large enough for storage of items for a fairly extended time duration.*

- *If the above goal is pursued, there is usually a second area for those items that are not re-usable. This area will usually simply be a location for ease of dumping heavy items into a large container.*

- *There must be a plan – coordinated with a local charity such as the Deutsches Rotes Kreuz (DRK) for final disposal of re-usable items that are not claimed by BSB personnel.*

- *White goods that contain Freon and other refrigerants or chemicals must be emptied and the chemicals disposed of separately. Storage of such white goods destined for disposal (rather than reuse) is managed in accordance with the requirements of the BSB's HWMP.]*

Table 4-4 shows the location and operating hours of BSB collection facilities for white goods, furniture, and bulky waste.

Table 4-4: Collection Facilities for Bulky Wastes, Furniture, and White Goods

Facility Location	Collection Method	Materials Accepted	Reuse/Disposal Method	Operating Hours
SORT-Center, Patrick Henry Village	*Customer drop off*	*Buky items, furniture and white goods*		*8:00-12:00;13:00-16:00 (Mon-Fri)* *8:00-13:00 (Sat)*
411th BSB Heidelberg Communities except Germersheim	*Curbside Collection*	*Buky items, furniture and white goods*		*Weekly with little exceptions according to pick-up shedule*

The system for collection of bulky waste, furniture, and white goods is operated under contract with the Amt für Abfallwirtschaft und Stadtreinigung of the city of Heidelberg.

4.9 SCRAP VEHICLES

The BSB provides for scrap vehicle collection, holding, or recycling at the locations listed in Table 4-5. Collection of scrap vehicles is done on an as-needed basis. These activities are not the responsibility of Directorate of Public Works DPW but of DMWR(?) .

Table 4-5. Scrap Vehicle Collection and Recycling Activities

Facility / Operation	Occurring on BSB? (Yes/No)	ARLOC	Building Number
Recycling center for scrap vehicles			
Scrap vehicle receiving shops, recycling centers and facilities for further recycling of vehicle			
Dual scrap vehicle receiving center and vehicle repair shop			
Holding yard or facility for treatment of more than four scrap vehicles, including POVs and military vehicles that require an operation license, permit, and a plate	Tompkins Barracks Patton Barracks	GE846 GE658	4289
Scrap vehicle draining			

4.10 MATERIALS PROCESSING FACILITY (MPF)

A centralized Materials Processing Facility (MPF) is neither existing nor planned for the BSB, however transportable paper compactors are provided at locations with major waste paper or cardboard generation (Patton Barracks, Commercial Area, Hospital)

4.11 OTHER WASTES

The BSB provides for the "problem wastes" as described below.

4.11.1 Household Hazardous Waste (HHW)

[NOTE TO PLAN WRITER: Coordinate with SWMP Sections 4.7 and 4.8 and review the BSB's HWMP before completing this section.]

The BSB provides HHW collection at the location and intervals listed in Table 4-6. HHW collected at these events is segregated such that there is only one waste type per container. After transfer of these wastes into an HWAP, they become the jurisdiction of the BSB's Hazardous Waste program and are handled to meet all FGS requirements.

The following waste streams are collected:

- Paint thinners and other solvents
- Paints and varnishes
- Cleaners
- Gas bottles
- Pesticides (including herbicides and fungicides)
- Fertilizers
- Bleach
- Automobile fluids
- Photo and Hobby chemicals
- Batteries
- Wood preservatives
- Waste oil
- Air conditioning refrigerants
- Adhesives

Table 4-6. Household Hazardous Waste Collection Program

Location	Schedule Interval	Designated HWAP for Temporary Storage
SORT-Center, Patrick Henry Village	During opening hours	*None*

The BSB's HHW collection program is conducted under contract with the Amt für Abfallwirtschaft und Stadtreinigung of the city of Heidelberg and requires a peak number of 40 labor hours per week.

Dry cell batteries are collected in 25 boxes located in 11 BSB installations (Germersheim Army Depot, Tompkins Barracks, Golf Course, Army Airfield, Patrick Henry Village, Patton Barracks, Campbell Barracks, Heidelberg Hospital, Community Support Center, Hammonds Barracks and Mark Twain Village)

4.11.2 Tires

[NOTE TO PLAN WRITER: It is strongly recommended to have a tire collection program of some type. A tire collection area must restrict direct contact of tires with storm water run-off and provide some means of disease vector (mosquito) control. Mosquito control is usually accomplished by neatly stacking the tires horizontally and/or by covering the tires to prevent accumulation of rainwater.]

Tires are collected at the Centralized Community Recycling Center (*SORT*-Center) at Patrick Henry Village. The waste tire storage area is fenced and secured when not open for operation. Tires are transported for disposal under contract with the Amt für Abfallwirtschaft und Stadtreinigung of the City of Heidelberg, with final disposal at Heidelberg Cement . This program requires 40 labor hours per week and is the responsibility of Amt für Abfallwirtschaft und Stadtreinigung of the City of Heidelberg [.

4.11.3 Scrap Metal

[NOTE TO PLAN WRITER: Scrap metal collection is recommended. It can easily be provided by a separate container at a centralized collection facility. If no centralized collection facility is available, then a separate facility must be constructed that is fenced and staffed during normal operating hours. Scrap metal should be processed through the local DRMO. Proceeds from sales of scrap metal are then credited to the BSB's recycling account under the Resource Recovery and Recycling (RRR) Program. This program serves as a source of funds for executing recycling, energy conservation, or other environmentally related projects.]

Scrap metal is collected at at the Centralized Community Recycling Center (*SORT*-Center) at Patrick Henry Village The scrap metal container is within an area that is fenced and secured when not open for operation.

At the Germersheim US Army Depot, scrap metal is collected at the DRMO site, building 7968.

5 TRANSPORTATION

5.1 LABELING OF SOLID WASTE TRANSPORT VEHICLES

BSB personnel does not operate transport vehicles. If vehicles were operated, the following criteria would need to be met:

1. Vehicles are labeled with 2 rectangular, reflective, white warning signs, with a minimum baseline of 40 centimeters (cm), and a minimum height of 30 cm.

2. The warning signs are:
    - marked with a black ‘A’ (20 cm high, 3 cm wide)
    - clearly visible on the front and rear of the vehicle
    - perpendicular to the axle and no more than 1.50 meters above the road.

3. The driver of the vehicle is responsible for ensuring that the signs are in place.

5.2 TRANSPORTING WASTE OUTSIDE OF GERMANY

The BSB does not transport solid waste that is generated in Germany to locations outside of Germany. In terms of waste disposal abroad, disposal in a European Community member country has priority over disposal in another country. If wastes are exported outside of Germany, then the German authorities of the State of origin are responsible for waste transportation measures. All wastes are transported to the appropriate facility as required by regulation.

5.3 USE OF APPROVED DISPOSAL COMPANY

The BSB uses only approved and permitted disposal companies. The **Amt für Abfallwirtschaft Heidelberg** and the **Kreisverwaltung Germersheim** are responsible for confirming that disposal companies used are permitted and approved. An approved disposal company must have an inspection certificate *(Überwachungszertifikat)* and inspection seal *(Überwachungszeichen)* issued by the technical inspection organization and displaying the word *“Entsorgungsfachbetrieb."* If BSB (DoD) trucks are used for the transport of BSB (DoD)-generated solid (non-hazardous) waste, no permit is required.

6 DISPOSAL

6.1 SOLID WASTE LANDFILLS

The 411th BSB Heidelberg does not operate an on-post solid waste landfill. Rubbish is transported by the Amt für Abfallwirtschaft und Stadtreinigung of the City of Heidelberg to the incinerator located at Friesenheimer Insel, Ölhafenstraße, 68169 Mannheim.

6.2 CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL

Only contaminated construction debris is disposed in a landfill. Uncontaminated construction debris is considered recyclable, and thus is not disposed in a landfill. Uncontaminated construction debris is collected separately. After treatment and preparation, it is made available for reuse as construction material. The selection of the landfill It is in the responsibility of the contractor.

6.3 INCINERATORS

The BSB does not operate an incenerator on the installation. Refuse from the BSB is transported by **Amt für Abfallwirtschaft und Stadtreinigung of the City of Heidelberg** to the regional incineration plant located at **Friesenheimer Insel, Ölhafenstraße, 68169 Mannheim.** In case of the installation in **Germersheim** refuse is transported by the **Kreisverwaltung Germersheim** to the **Incinerator Pirmasens**.

6.4 OPEN BURNING

Open burning is not a method of solid waste disposal used at the BSB.

6.5 SEWAGE SLUDGE/WASTEWATER TREATMENT

[NOTE TO PLAN WRITER: Coordinate this section with the operator of your wastewater treatment plant. Select the paragraph below that best describes the BSB sewage sludge management practices and delete all others.]

The BSB does operate a wastewater treatment plant, and the BSB is responsible for the management and disposal of the sewage sludge, in accordance with the practices detailed in Appendix 5.

7 COMPOSTING

[NOTE TO PLAN WRITER: Update the following paragraphs to reflect current or planned BSB composting practices for municipal solid waste and yard waste.]

7.1 MUNICIPAL SOLID WASTE (MSW) COMPOSTING FACILITIES

411th BSB Heidelberg does operate a MSW composting facility on site at Germersheim US Army Depot. For all other BSB installations, composting of waste is provided or coordinated by the Amt für Abfallwirtschaft und Stadtreinigung Heidelberg. MSW composting of waste is performed at a facility that is properly permitted by all appropriate authorities.

7.2 YARD WASTE COMPOSTING FACILITIES

[NOTE TO PLAN WRITER: Select the paragraph below that describes BSB yard waste composting facilities and delete the other.]

411th BSB Heidelberg does not operate a Yard Waste Composting facility on site. Composting of 411th BSB waste is provided or coordinated by the **Amt für Abfallwirtschaft und Stadtreinigung Heidelberg**. MSW composting is performed at the **Kompostanlage Wieblingen**, Mittelgewannweg, which is properly permitted by all appropriate authorities.

8 CONTAINERS

[NOTE TO PLAN WRITER: Complete Appendix 3 prior to completing this section.]

8.1 CONTAINER SPECIFICATIONS

Storage containers are leakproof, waterproof, and vermin-proof (including sides, seams, and bottoms) and are durable enough to withstand anticipated usage and environmental conditions without rusting, cracking, or deforming in a manner that would impair serviceability. All storage containers have functional lids.

Storage containers are inspected on a regular basis to ensure that they continue to meet the above requirements throughout their lifetime.

Storage containers are replaced immediately if any one of the following conditions is met:

- Container has a leak; or
- Lid no longer functions to keep rainwater out of waste; or
- Container no longer seals tightly enough to deter vermin; or
- Container is cracked or deformed, making handling difficult.

8.2 CONTAINER INVENTORY

[NOTE TO PLAN WRITER: Provide information in this section on the BSB's process for evaluating container locations and volume usage to ensure efficient placement and pickup frequency of containers. Use the data tabulated in Appendix 3, and the goals identified in Table 3-4 to determine if containers are being utilized to their maximum efficiency.]

An inventory of the total number of containers is provided in Appendix 3. Overall, the container volume goals have not yet been achieved. For Housing/Barracks, the available total container volume is slightly higher than the goal, the ratio recyclables to rubbish is inverted. For Office/Adminstrative, the total available container volume is more than twice the goal, the container volume for rubbish is six times higher than the goal (see table 3.4).

[NOTE TO PLAN WRITER: Provide an assessment of the specific areas where container utilization needs improvement and identify proposed plans for moving or adding containers, or changing pick-up frequencies.]

8.3 CONTAINER STORAGE

Containers are stored on a firm, level, well-drained surface that is large enough to accommodate all of the containers and is maintained in a clean, spill-free condition.

The EMO works with DPW O&M to ensure that all buildings or other facilities constructed, modified, or leased include provisions for storage areas that 1) accommodate the volume of solid waste anticipated; 2) are easily cleaned and maintained; and 3) allow for safe, efficient collection.

9 DOCUMENTATION, REPORTING, AND PERMITTING

9.1 DOCUMENTATION

All BSB-generated wastes are assigned a six-digit code as per FGS Table C7.T1. When assigning the waste into the relevant types, the two-digit, branch-specific or process-specific code precedes any two-digit code denoting origin or type of waste.

Preparation of solid waste documentation is, in many cases, a responsibility shared with the waste contractor or municipality. However, responsibility for retention of these documents is the responsibility of the BSB. Specific requirements are detailed in FGS Chapter 7 by waste types. Requirements for retention of key documents are summarized in Table 9-1.

Table 9-1. Document Retention Requirements

Waste Type	Record Type	Retention Time
Residential rubbish and recycling	Acceptance slips *(Übernahmeschein)* and weight slips *(Wiegeschein)*	3 years
Commercial / industrial rubbish and recycling	Proof logs *(Nachweisbüchern)*, which include simplified proof forms *(vereinfachter Sammelnachweis VS)*, acceptance slips *(Übernahmeschein)*, and weight slips *(Wiegeschein)*	3 years (minimum)
Compostable Materials	Delivery note *(Lieferschein)*	3 years (minimum)
Scrap Vehicle Recycling	Incoming and outgoing volumes, transportation permits *(Transportgenehmigung)*, acceptance slips *(Übernahmescheine)*, and disposal documentation *(Entsorgungsnachweis, Begleitscheine)*	

9.2 RECORDKEEPING AND REPORTING

As the operator of a composting facility, recycling center, scrap yard *(BImSchG-Anlage)*, the BSB submits annual reports to the host nation authority to document the following information:

- Type, amount, origin and locations of treated, stored or deposited waste;
- Type and location of the facility; and
- Mechanisms for the treatment of waste and for the protection of groundwater.

As the operator of facilities (e.g., scrap yards) that require a permit *(BImSchG-Anlagen),* the BSB submits biennial reports to the host nation authority regarding recycled waste types.

Solid Waste Annual Report (SWAR)

The BSB prepares and submits a Solid Waste Annual Report (SWAR) in compliance with the USAREUR Separate or Recycle Trash (SORT) program. The BSB updates the SWAR quarterly and submits a copy electronically to IMA-EURO via SWARWeb.

Waste Management Plan and Waste Registry

*[NOTE TO PLAN WRITER: This requirement applies to BSBs that generate more than 2,000 metric tons/year of waste requiring supervisio*n (per waste *type) or more than 2 metric tons of waste requiring special supervision. Consult BSB's HWMP for further information. Use the paragraph that is applicable to the BSB.]*

At the present time, preparation of a Waste Management Plan and a Waste Registry is not required at the BSB, per FGS *C7.3.19.2* or *FGS C6.3.1.2*. These requirements are re-evaluated during the 5-year review cycle.

[NOTE TO PLAN WRITER: Additional process-specific reporting requirements are identified in FGS Chapter 7. Incorporate BSB-specific reporting requirements in this section.]

Waste Stream Characterization

As part of the recordkeeping required to prepare the above reports, the BSB generates data on waste generation rates, annual waste volumes, and waste collection frequency requirements. The data required to fully characterize the BSB's waste streams are also used to prepare the BSB's SWAR (described above) and to negotiate terms and conditions with solid waste contractors. Detailed guidance on the waste characterization process and a series of worksheets are provided in Appendix 6. The results of the BSB's waste characterization are summarized in .

Table 9-2. BSB-Wide Waste Stream Characterization Results

Category	Percent by Weight	Percent by Volume
Glass	1.3	0.5
Paper	23.4	10.8
Metals	0.0	0.1
DSD	0.0	0.0
Compostables	1.2	1.8
Biodegradables	38.7	59.9
Food waste / Garbage	0.3	0.5
Rubbish	28.8	22.2
Wood	2.1	1.0
Other[1)]	4.2	3.2
TOTAL	100.0	100.0

1) Aluminium Cans, Asbestos, Bulky Refuse, Electronics, Mixed Recyclables, Plastic, Recycled C&D Debris, Scrap, Tires, White Goods/Appliances

Note: Year 2003 results

9.3 PERMITTING REQUIREMENTS

[NOTE TO PLAN WRITER: Delete any of the following paragraphs not applicable to your BSB.]

All landfills used for disposal of BSB wastes are authorized *(zugelassene)* facilities that have been assessed by DoD against FGS requirements. BSB solid wastes are treated, stored, and disposed of in authorized facilities that have been permitted by appropriate German Federal and State authorities. Waste facilities in Germany possessing valid permits meet DoD solid waste disposal standards.

Composting Facilities

Composting facilities used by the BSB are operated according to German Waste Law and FGS Section 7.3.15.1.2.

Transportation

All subcontractors that transport BSB waste for disposal are permitted by the appropriate German authorities. This includes the public entity responsible for disposal *(öffentlich-rechtlicher Entsorgungsträger)* or private transport companies.

Scrap Vehicles

The BSB operates a holding yard or facility for more than four scrap vehicles, and thus holds an operation license *(Betriebserlaubnis)* and a plate *(amtliches Kennzeichen)*

.

10 TRAINING

The BSB conducts training for waste management and recycling program personnel as necessary, and reviews the training program periodically to ensure all required training is provided.

[NOTE TO PLAN WRITER: Modify the following text to reflect the solid waste management activities conducted at the BSB.]

The BSB provides waste management and recycling personnel with training in accordance with FGS requirements (Chapters C7, C5.3.10, C6.3.9), DoDI 6050.1, and/or DoDI 6050.5. Personnel responsible for waste management are provided a minimum 2-hour annual refresher on the inspection of incoming wastes, handling and storage of wastes, safety in processing procedures, environmental protection procedures, reporting and documentation, and maintenance of processing equipment.

All personnel responsible for implementing the SORT and Education programs are provided a 2-hour annual update of all recycling and composting programs available to BSB personnel.

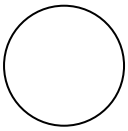
APPENDIX 1

MAPPING AND LOCATIONS OF

COLLECTION, PROCESSING, AND DISPOSAL FACILITIES

(Insert Maps here)

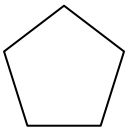
SYMBOLS



CONVENIENCE CENTER LOCATION

Each Convenience Center on the map should be given a designation number in the following configuration:

XXXXX = Convenience Center ID Number. The ID No. will be the corresponding ARLOC No.



CENTRALIZED COMMUNITY RECYCLING CENTER

Each Centralized Community Recycling Center on the map should be given a designation number in the following configuration:

XXXXX = Centralized Community Recycling Center ID Number. The ID No. will be the corresponding ARLOC No.

APPENDIX 2

EDUCATION PROGRAM

[NOTE TO PLAN WRITER: Modify the following list of potential education programs to provide a reasonable education program for your BSB.]

BSB Education Program

The BSB performs an education program comprised of the elements listed below. All educational programs are the responsibility of the SORT Program Coordinator.

Program	Date or Schedule	Target	Materials Needed
Distribution of SORT policies to the housing officer for all new BSB residents	On-going	New BSB residents	SORT Policies including locations of convenience centers and recycling facilities
Perform SORT presentation as part of the New-Comer or Pre-orientation Program	weekly	New BSB residents	Handouts
Broadcast SORT Program information via radio and newspaper	Every five months	All	None
Post SORT billboards and posters at PX shops and the commissary	As materials are available	PX customers and the PX contractor	Posters
Make SORT presentation at BSB Schools	As needed	Children	Handouts
Conduct a survey of BSB residents for improvement of collection and recycling facilities	Annually	BSB residents	Survey and Participation Prize
Conduct Earth Week programs such as those described in the SORT Program Guide	Annually (April)	All	Handouts, posters, demonstrations, videos, etc.

APPENDIX 3

CONTAINER INVENTORY

[NOTE TO PLAN WRITER: Use this inventory to tally the total number of BSB containers.]

US ARMY LOCATIONS AT 411TH BSB HEIDELBERG INCLUDED IN SWMP

	ARLOG	INSTALLATION NAME
1	GE12F	Campbell Barracks
2	GE19P	Edingen Radio Receiver Facility
3	GE30J	Germersheim Army Depot
4	GE33	Hammonds Barracks
5	GE34F	Heidelberg Golf Course
6	GE34G	Heidelberg Hospital
7	GE34J	Community Support Center (DPW Compound)
8	GE35B	Heidelberg Airfield
9	GE45D	Kilbourne Kaserne
10	GE46F	Koenigstuhl Radio Relay Station
11	GE52L	Mark Twain Village
12	GE62S	Small Arms Range
13	GE654	Patrick Henry Village
14	GE658	Patton Barracks
15	GE76P	Seckenheim Autobahn Kaserne STEM
16	GE846	Tompkins Barracks

APPENDIX 4

YARD WASTE COMPOSTING FACILITY OPERATIONS AND OVERSIGHT

[NOTE TO PLAN WRITER: Include this section if the BSB operates a Yard Waste Composting Facility.]

A-4.1 OPERATIONAL REQUIREMENTS

A-4.1.1 Facility Requirements

A composting facility exists on the **US Army Depot Germersheim** and is used for treatment of yard waste and shredded untreated wood, only by the organizations on post. Access to the facility is not separately controlled, but a general access restriction to the Depot exists.

Water that contacts waste materials is collected and used for moistening of the composting material (treated and released). Areas where contaminated water may occur are impermeable. The facility does not use sewage sludge as a moistening and nitrogen agent.

By-products, including residuals and materials that can be recycled, are stored to prevent vector intrusion and aesthetic degradation. Materials (such as plastic bags) that are not composted are removed periodically. By-products, such as sedimentation residuals from leachate collection or residues from filtering processes, are returned to the composting process.

The facility only processes plant and yard waste and soil materials, peat or mineral materials in an unmixed state, if subsequent to treatment, pathogenic and phytohygienic non-objection is achieved, and no increased levels of further contamination are indicated.

A-4.1.2 Inspections

Direct process inspections are conducted within 12 months of initiation of a new treatment system (startup inspection). This also applies to systems that introduce new processes or significant technical modifications of existing processes or procedures. If inspection reveals any materials other than yard and plant wastes being processed, the facility is immediately shut down and analyses performed as described below.

A-4.1.3 Required Analyses

Analysis of unmixed materials for heavy metals are conducted when there are indications that limit values for heavy metals are not being met. Analyses for organic contaminants in unmixed materials or treated biological waste are conducted if the composition of the unmixed individual materials of treated biological waste indicates increased levels of these contaminants.

If these analyses establish the presence of elevated constituent concentrations, then the results are submitted immediately to the relevant authorities. Further treatment, supply, and application of these materials is discontinued until a decision is received from the authorities.

All analyses are conducted by laboratories specified by the State, and the BSB submits the data to the appropriate German authorities every 6 months.

A-4.2 USE OF COMPOSTED MATERIALS

Yard waste material that has been composted is utilized onsite for the purposes of soil improvement and topsoil amendment.

General Land Applications

Only composting material below the threshold values listed below (from FGS Table C7.T12) will be applied.

(Units are mg/kg of dry matter)

PCB	1
Cadmium	1.5
Chromium	100
Copper	100
Lead	150
Mercury	1
Nickel	50
Zinc	400

Forested Land Applications

Only composting material below the threshold values listed below (from FGS Table C7.T12) will be applied.

(Units are mg/kg of dry matter)

PCB	1
Cadmium	1
Chromium	70
Copper	70
Lead	100
Mercury	0.7
Nickel	35
Zinc	300

A-4.3 DOCUMENTATION AND REPORTING

The BSB generates, on a quarterly basis, a list of the composting materials used, according to type, origin, and quantity. Records regarding the temperature curves, turning times of composting processes (aerobic), and the loading intervals for anaerobic treatment plants are retained for 5 years.

The BSB prepares the following reports as part of operation of the Yard Waste Composting Facility.

Statistical Report

The BSB compiles and submits the following information to the respective State Agency for Statistics *(Statistische Landesamt):*

- The amount of biodegradable waste composted;
- The amount and intended use of the compost produced;
- The type and amount of the waste produced; and
- The capacity and serviceable life of the facility.

The information is submitted upon request on forms provided by the respective State Agency every 2 years. Information on incoming waste and removed materials that are not composted *(Störstoffe)* is submitted annually.

Annual Report

The BSB submits the following information to the appropriate German authorities annually:

- the type, amount, origin and whereabouts of the treated, stored or deposited waste;
- the type and location of the facility;
- the capacity of the facility as of 31 December of the preceding year; and
- the mechanisms established for the treatment of waste and for the protection of air, water, and groundwater quality as of 31 December of the preceding year.

APPENDIX 5

ON-POST MANAGEMENT OF SEWAGE SLUDGE

[NOTE TO PLAN WRITER: Modify and include this section if you will be responsible for the management and disposal of sewage sludge, otherwise delete this appendix.]

A-5.1 SAMPLING, TESTING, AND LIMIT VALUES FOR LAND APPLICATION

A Sewer Treatment Plant exists only on **Germersheim US Army Depot**. Samples of the sewage sludge are sampled for the following constituents prior to the first application and at intervals of 2 years:

- polychlorinated biphenyls
- polychlorinated dibenzodioxins
- dibenzofurans.

Following the first application and initial testing, samples of the sewage sludge are analyzed at 6-month intervals, for:

- heavy metals
- total halogenated compounds (AOX)
- aggregate and ammonium nitrogen
- phosphate
- potassium
- magnesium
- dry residue
- organic content
- alkaline-effective substances
- pH

Sewage sludge is only supplied to or spread on agricultural land if the following limit values are not exceeded (from FGS Table C7.T12). Units are mg/kg of dry matter of the applied material:

PCB	0.2	
Dioxin	100	(nanograms [ng])
Cadmium	10	
Chromium	900	
Copper	500	
Lead	500	
Mercury	5	
Nickel	100	
Zinc	1,000	

Sewage sludge is only spread on ground soil that meets the limit values for pH value, phosphates, potassium, and magnesium available to the vegetation. Sewage sludge is not applied to fruit- or vegetable-growing land, permanent green areas *(Dauergrünland*, for example pastures), forested land, in Class I and II water protection zones *(Wasserschutzgebiet),* or in natural protection areas.

A-5.2 DOCUMENTATION

[NOTE TO PLAN WRITER: Choose one of the following paragraphs:]

Sewage sludge is picked up and disposed by the Kreisverwaltung (county administration) Germersheim. Processing and documentation falls under their responsibility.

The BSB (Facility Engineering ?) maintains a waste registry, which contains the following information:

- Quantities of sludge generated;
- Quantities delivered to agricultural facilities (in metric tons, dry weight);

- Properties of the sludge;
- Type of sludge treatment;
- Name and address of recipient of sludge, ordered according to lot numbers;
- Results of the soil investigation, listed according to lots and ordered according to lot numbers.

Sewage sludge is delivered to the incinerator at Pirmasens and is not land-applied, delivery notes *(Lieferschein)* for land application do not exist. (A delivery note records the time of delivery of the sewage sludge. A delivery note is kept in the transporting vehicle during transport, and the recipient confirms delivery and application of the sludge. The BSB must retain a copy of a delivery note for 30 years.)

A-5.3 REPORTING

[NOTE TO PLAN WRITER: Delete the following sentence if the BSB is exempt from the requirement to prepare a Waste Registry.]

The Waste Registry is submitted to the appropriate German and state authorities by the end of the first quarter of each calendar year (March 31).

Sewage sludge of the US Army Depot at Germersheim is disposed in the incinerator Pirmasens. Land application does not take place. (Land application would require that the BSB notifies the authorities responsible for the land application unit, as well as the agricultural authorities, of the intended application, before delivery of the sewage sludge. The BSB would need to submit a copy of the delivery note to each of the authorities responsible for the treatment plant and the treated land. The original note of delivery woud be submitted to the operator of the treatment plant.)

APPENDIX 6

WORKSHEETS FOR WASTE STREAM CHARACTERIZATION

[NOTE TO PLAN WRITER: This section is intended to generate a waste stream characterization to facilitate analysis of collection alternatives. If the BSB already has a waste stream characterization, you may skip this appendix. Many BSBs already have this information but in other cases, the nature of their solid waste contract does not allow for detailed breakdowns of the waste stream.]

[NOTE TO PLAN WRITER: In the absence of other information, the information that you derive herein may also be used to assist you in preparation of your Solid Waste Annual Report or negotiations with your solid waste contractor.]

[NOTE TO PLAN WRITER: This section is for the creation of a working Waste Stream Characterization IF YOU DO NOT ALREADY HAVE ONE. If the BSB has already developed this information, proceed directly to Table A-6.8.]

A-6.1 GATHER AVAILABLE EXISTING WASTE STREAM INFORMATION

[NOTE TO PLAN WRITER: Information inserted in the following table should correspond to the most recent Solid Waste Annual Report). Place "ND" in those sections for which there are no data and describe why there are no data in the "Remarks" section.]

[Write a brief statement concerning the accuracy / validity of the total number shown in Table A-6.1. If the total includes weights from items 1 and/or 3 OR if no comprehensive weight is available, please describe how valid information will be attained for the next plan update.]

Required data of population and housing units were not yet available for the draft submittal, pertinent tables have not yet been completed.

Present contracts for collection and disposal of waste do not require feet-back of waste quantities anymore. Waste quantities are extrapolated based on values derived from random sampling. Quantity feed- back via a contract extension with the collection and disposal contractor is suggested to get more reliable data.

Table A-6.1. Calculation of Actual Annual Waste Tonnages

[NOTE TO PLAN WRITER: Double-click on Table A-6.1 to open as an Excel spreadsheet. When finished with data entry, click outside the spreadsheet frame to return to Word and display the calculated results.]

Row	Method	Metric Tons (Annually)	Waste Type	Remarks
1	Rubbish, weight estimated by volume or number of containers (not preferred)	*6.450,20*	Rubbish	
2	Rubbish, weighed at scales at BSB entrance or centralized processing facility prior to disposal off base.	*0*	Rubbish	
3	Rubbish, weight provided by contractor with no breakdown of disposal methodology (not preferred)	*0*	Rubbish	
4	Rubbish, weight provided by contractor prior to landfilling off base	*0*	Rubbish	
5	Rubbish, weight provided by contractor prior to incineration off base	*0*	Rubbish	
6	Compostable material, estimated by volume of containers	*262,68*	Compost	
7	Recyclable material, weighed on base	*0*	Glass, Paper, Metal	Non-DSD recyclables if they must be separate.
8	Recyclable material, weight provided by contractor	*0*	Glass, Paper, Metal	Non-DSD recyclables if they must be separate.
9	Recyclable material, weight estimated by volume or number of containers (not preferred)	*15.723,34*	Glass, Paper, Metal	Non-DSD recyclables if they must be separate.
10	Yard Waste as a separate category (weighed on base)	*0*	Compost	
11	Yard Waste as a separate category (weighed by contractor)	*0*	Compost	
12	Yard Waste as a separate category (weight estimated by volume or number of bags, etc.)	*0*	Compost	
13	DSD Recyclables as a separate category (weighed on base)	*0*	DSD	
14	DSD Recyclables as a separate category (weighed by contractor)	*0*	DSD	
15	DSD Recyclables as a separate category (weight estimated by volume or number of bags, etc.)	*0*	DSD	This is usually the only number available on DSD.
TOTAL		**22436,22**		

A-6.2 Compare Data to Estimated Industry Averages

For a comparative assessment of the base tonnage versus industry averages, complete the tables below. *Double-click on the tables to open as Excel spreadsheets. When finished with data entry, click outside the spreadsheet frame to return to Word and display the calculated results.]*

[NOTE TO PLAN WRITER: If the calculated difference in Table A-6.3 is positive, this usually indicates one of two things:

Table A-6.2. Waste Tonnage Estimate Based on Industry Averages

Row	Description	Number	Average Annual Waste per Capita (1) (metric tons)	Estimate of metric tons per year
1	Number of residents living on base in single family homes	*0*	2.1	0
2	Number of people living on base in apartments and BOQs	*0*	2	0
3	Number of people living on base in barracks	*0*	1.75	0
4	Number of people working on base but living off base	*0*	0.75	0
5	Total population	*18,965*	2	37930
TOTAL		**18965**	**TOTAL**	37930

NOTES:
(1) Modify if average information for other similar facilities is available.

Table A-6.3. Comparison of Actual Waste Tonnages to Industry Averages

Description	Metric Tons per Year
Actual total metric tons per year (from Table A-6-1)	22436
Estimated total metric tons per year (from Table A-6-2)	37930
Difference	**-15494**

1. *The methodology for determining weight of solid waste (Table A-6.1) is questionable, or*

2. There are significant waste generators on the BSB that are specific to the BSB and, as such, are not accounted for in the industry averages.]

A-6.3 SIGNIFICANT WASTE GENERATORS

[NOTE TO PLAN WRITER: Fill in the following table with information on the significant waste generators at the BSB (the Exchange will usually be listed, with cardboard as one of the primary recyclable wastes generated).]

[NOTE TO PLAN WRITER: Provide one line per generator per waste category generated. This means that each generating location may require more than one line. For example, the Exchange will have one line for Rubbish and a second line for Paper.]

Table A-6.4. Listing of Significant Waste Generators

Description of Generator	Metric Tons per Year	Category of Waste (1)
NONE		
TOTALS		

NOTE:

1 Rubbish, Glass, Paper, Metal, DSD, or Compostable

A-6.4 WASTE GENERATION RATES PER CAPITA

[NOTE TO PLAN WRITER: Complete the following table with information from the referenced tables within this appendix.]

Table A-6.5. Calculation of Residential Waste Generation Rate

(1) Description	(2) Input/Output
(a) Total Annual Residential Waste (Subtract the total metric tons from Table A-6.4 from the total metric tons from Table A-6-1)	22,436.22 tons / year
(b) Total Number of Residents (Add the numbers in Table A-6.2, rows 1, 2, 3)	18,965 residents
(c) Metric Tons Per Resident Per Year (Divide 2a above by 2b above)	1.18 tons / year / resident

A-6.4.1 Field Data for Waste Stream Characterization

[NOTE TO PLAN WRITER: Gathering field data for a waste stream characterization is a time-consuming task that requires a large sampling of the convenience centers. Anticipate about 4 hours per center and try to sample at least 20 percent of your BSB's convenience centers.]

Items Needed

1. Protective clothing for all involved: thick gloves, boots, filter masks, goggles, etc.
2. Location for sorting collected rubbish
3. Six identical trash receptacles of known size: Rubbish, Glass, Paper, Metal, DSD, and Compostable
4. Means of weighing the trash receptacles
5. Copies of Forms A-6-1 and A-6-2, clipboards, and pencils or pens

Process

The BSB implements the following process to gather field data for waste stream characterization:

1. Prepare a schedule for the field sampling. Assume at first that you can sample two convenience centers per day. Locate and schedule the centers.

2. Provide notice to the base residents regarding the waste stream characterization effort, and the dates and locations of sampling;

3. Have all of the containers in each of the target convenience centers emptied on the same day, one cycle prior to the scheduled sampling. If your centers are emptied every seven days, schedule this seven days prior to when you will be sampling.

4. On the day of sampling, use Form A-6.1 to analyze the volumes of the segregated wastes (Rubbish, Glass, Paper, Metals, DSD, and Compostables)

5. Haul the rubbish containers to the sorting location and dump them onto the tipping floor. Hand-sort the waste into the six containers. As each container fills, use form A-6-2 to record the volume and weight before disposing into the final container. Keep the rubbish from different convenience centers separate to facilitate identification of statistical anomalies.

A-6.4.2 Industry Averages for Use in the Absence of Better Data

[NOTE TO PLAN WRITER: The following tables are provided for your use as a comparison tool or in the absence of site-specific data. Revise these numbers when better data are available.]

Table A-6.6. Industry Averages for Volume to Weight Conversions

(a) Type of Waste	(b) Industry Average Weight per Volume at Collection (kg/m^3)
Rubbish	180
Compostables	90
Recyclable Paper Products	300
Recyclable Glass Products	350
Recyclable Plastic Products	20
Recyclable Metal Products	50
DSD Recyclables	130
Yard Waste	230

Form A-6.1
Field Analysis of Segregated Wastes in Convenience Centers

Digital Document see EXEL-sheet “form A-6.1.xls”

Form A-6.2
Field Analysis of Rubbish Containers in Convenience Centers

ID No.	ARLOC	Bldgs Served	DSD		Glass		Paper		Metals		Compost		Other (HHW, etc.)		Rubbish		TOTAL	
			Vol.	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt.	Vol.	Wt.
			Not part of contract															
Sheet Totals																		

Table A-6.7. Industry Averages for Waste Stream Breakdown by Weight

Primary	Percent by Weight Based on Industry Averages (primary)	European Classification Code
Paper Products	40.0	15 01 01 (large scale) or 20 01 01 (residential)
Glass	7.0	20 01 02
Metal	8.5	17 04 (large scale) or 20 01 05 (cans and residential)
DSD (Green dot) packaging (Germany only)	8.0	15 01 02 (large scale) or 20 01 03 or 20 01 04 (residential
Compostables	28.6	15 01 03 (large scale) or 20 02 07 (residential) or 20 02 08 or 20 02 01
Rubbish	7.9	
TOTAL	**100.0**	

A-6.5 CONCLUSION – RESIDENTIAL WASTE STREAM CHARACTERIZATION

Residential waste stream characterization numbers presented in Table A-6.8 are derived from [site-specific waste stream characterization] [industry averages, adjusted to account for significant waste generators in Table A-6.4].

Table A-6.8. Residential Waste Stream Characterization

Category	Percent by Weight	Percent by Volume
Glass	Field analysis not part of contract	
Paper		
Metals		
DSD		
Compostables		
Rubbish		
Other		
TOTAL	**100.0**	**100.0**

APPENDIX 7

WORKSHEETS FOR DESIGN OF A

CONVENIENCE CENTER COLLECTION PROGRAM

[NOTE TO PLAN WRITER: "Implementation Guidelines for the USAREUR SORT Program" dated 25 March 2002, recommends that solid waste collection for multi-family dwelling units be provided such that each convenience center is fenced and locked, with access limited to the assigned residents. Each facility should provide separate containers for rubbish, recyclable packaging, paper and cardboard, and compostables. The determination for how many separate containers are required must be determined based upon the recycling program in your area of Germany and should be negotiated with your solid waste contractor.]

[NOTE TO PLAN WRITER: Studies and past experience indicate that in a military base environment, customers will travel a maximum of 5 minutes from the farthest residence served to a convenience center. Participation drops off dramatically if distances requiring more than 5 minutes travel are involved. In evaluating convenience center citing, demographics of the base residents must be considered. If most residents will be walking to the center, then a reasonable distance for a 5-minute walk laden with containers would be 0.3 kilometers (300 meters). If most residents will be driving, a reasonable distance within which a car can be loaded and driven in 5 minutes is 2 kilometers. Remember that this is the distance to the farthest person served – not an average distance.]

A-7.1 NUMBER AND LOCATION OF CONVENIENCE CENTERS

[NOTE TO PLAN WRITER: Using the base map, locate each of the BSB convenience centers and complete the following tables to identify the number of convenience centers and spatial distribution.]

Table A-7.1. Convenience Center Locations

Digital Document see EXEL-sheet " Table A-7.1.xls"

A-7.2 ESTIMATES OF WASTE GENERATION AND RECYCLING

[NOTE TO PLAN WRITER: Completion of this section is not necessary if these numbers are available from another source. These numbers will be used to establish recycling goals, help in Solid Waste Annual Report preparation, and possibly assist in negotiation with contractors.]

Table A-7.2. Background Assumptions for Waste Volumes and Weights

(a) Type of Waste	(b) Industry Average Weight per Volume at Collection (kg/m^3) [1]	(c) Percentage of Total Waste Stream by Weight [2,3]
Rubbish	180	28.75
Compostables (not yard waste)	90	1.17
Paper	300	44.15
Glass	350	7.71
Plastic	20	8.76
Metal	50	9.46
DSD Recyclables	130	0.00
Yard Waste	230	0.00

Notes:

1 Kilograms per cubic meter (kg/m^3).

2 From Table A-6.8

3 If Total Tonnage of Recyclables (RECTOT) is the only number available for paper, glass, plastic, and metal then use the following breakdown:
Paper – 63.0% of RECTOT
Plastics – 12.5% of RECTOT
Glass – 11.0% of RECTOT
Metals – 13.5% of RECTOT

[NOTE TO PLAN WRITER: Complete the following information for the reasonable maximum number of families that will be served from a hypothetical single convenience center.]

Table A-7.3a. Estimated Waste Generation per Convenience Center

Item	Data	Units
1. Number of Residents using a Single Convenience Center (e.g., estimate 45 households, with an average of 4 residents per household, for a total of 180 residents per center)	180	residents / convenience center
2. Annual Waste Generation per Resident (From Table A-6.5, cell (2)(c))	1.18	metric tons / year / resident
3. Annual Metric Tons of Waste Generated per Convenience Center (row 1 * row 2)	212.4	metric tons / year / convenience center

Table A-7.3b. Estimated Waste Generation Volume per Convenience Center

(1) Data in Table A-7.2 column (b) is in kilograms per cubic meter (kg/m^3). Convert to metric tons per cubic meter by dividing this quantity by 1,000 (based on the equivalency of 1,000 kilograms per metric ton). The result in column (d) is in units of cubic meters per year per convenience center.
(2) Use Table A-7.2 totals, dividing each waste type total by the total population.

DATA FOR CONVENIENCE CENTERS NOT SEPARATELY COLLECTED!

(a) Item (fill in only those items with separate containers and strike through others)	(b) Annual Waste Generation per Capita (Metric tons/person/year) (2)	(c) Annual Waste Generation Weight per Convenience Center (Metric tons/year/center)	(d) Annual Waste Generation Volume per Convenience Center (m^3/year/center)
Rubbish	-	-	-
Compostables	-	-	-
Paper / Cardboard	-	-	-
Glass	-	-	-
Plastic	-	-	-
Metal	-	-	-
DSD Recyclables	-	-	-
		TOTAL	-

Table A-7.4. Number of Pick-Ups Required Per Week

DATA FOR CONVENIENCE CENTERS NOT SEPARATELY COLLECTED!

(a) Item (fill in only those items which will have separate containers – strike through others)	(b) Weekly Waste Volume in m^3 (Table A-7.3b, column (d) divided by 52)	(c) Number of Containers Generated Per Week (Divide column (b) by a proposed container size of 1.1, 5.0, 7.0, or 13.0 m^3)	(d) Number of Pick-ups Required Per Average Week (Based on column (c) and the maximum # of containers that can fit in a center)
Rubbish	-		
Compostables	-		
Paper / Cardboard	-		
Glass	-		
Plastic	-		
Metal	-		
DSD Recyclables	-		
		TOTAL	***0***

[NOTE TO PLAN WRITER: If the number of pick-ups required in Table A-7.4 is more than the number proposed in the actual collection program, the BSB Contracting Officer must evaluate if the number of pick-ups is sufficient or if the container size or number is sufficient. In most cases, this should be discussed with the local German government agency providing waste collection services or the waste contractor. In the event that the BSB handles its own hauling and disposal for any of these items, use your experience and judgment to determine if the number of pick-ups and/or number and size of containers is sufficient.

If the number of pick-ups required in Table A-7.4 is more than half the number proposed in the actual collection program, the BSB Contracting Officer should expect that additional pick-ups will be needed during the Christmas season or during large-scale troop movements.

If the number of pick-ups required in Table A-7.4 is less than the number proposed in the actual collection program, the BSB Contracting Officer may need to review the cost-effectiveness of the number of Convenience Centers or the container choice.]

APPENDIX 8

WASTE MANAGEMENT GOALS

[NOTE TO PLAN WRITER: Complete the following worksheets using the most recent SWAR. Double-click on the table to open as an Excel spreadsheet. When finished with data entry, click outside the spreadsheet frame to return to Word and display the calculated results.]

Table A-8.1. Calculation of Parameter Values

Row	Parameter	Calculation Method	Value
1	Total Disposal Cost Per Housing Unit (all Housing Units)	Total annual waste disposal costs for all housing units divided by total number of housing units	
2	Total Tonnage Disposal Per Housing Unit (all waste streams and all housing units)	Total Annual Tonnage Disposed from Housing Units divided by Total Number of Housing Units	
3	Total Tonnage Diverted Per Housing Unit (all wastes re-used, recycled, and composted) (all Housing Units)	DSD Annual Tonnage from Housing Units Diverted from Landfills and Incinerators (1) divided by Total Number of Housing Units	
4	Percent Diverted (all Housing Units)	Value in row 3 divided by the value in row 2, multiplied by 100	
5	Average Number of Housing Units Per Convenience Center	Total Number of Housing Units Served by Convenience Centers divided by Total Number of Convenience Centers serving Housing Units	
6	Total Container Capacity Per Housing Unit (Units Served by Convenience Centers)	Total Volume of All Containers in Convenience Centers divided by Total Number of Housing Units Served by Convenience Centers	
7	Annual Disposal Cost Per Container	Total Annual Cost of Emptying Convenience Centers divided by Total Number of All Containers in Convenience Centers	
8	Annual Disposal Cost Per Pick-up Per Container	Total Annual Cost of Emptying Convenience Centers divided by Total Number of Container Pick-ups Per Year	
9	Total Disposal Cost Per Personnel Devoted to Waste Management	Total Annual Waste Disposal Cost for All Housing Units divided by Total Number of Personnel devoted to Waste Management (2)	
10	Total Tonnage Disposed Per Personnel Devoted to Waste Management	Total Annual Tonnage Disposed from Housing Units (3) divided by Total Number of Personnel devoted to Waste Management (2)	

NOTES:

1 Includes convenience centers and curbside pick-up, includes all items recycled, re-used, or composted (unless composting does not count toward the BSB's diversion goal.)

2 Estimate part-time personnel as percentages.

3 Includes all waste streams from convenience centers and curbside pick-up.

Table A-8.2. Comparison of Parameter Values to Previous Years

Row	Parameter	Values from Previous Year	Values for Present Year (1)	Percent Improvement	Comments
1	Total Disposal Cost Per Housing Unit	*0*	*0*		
2	Total Tonnage Disposal Per Housing Unit	*0*	*0*		
3	Total Tonnage Diverted Per Housing Unit	*0*	*0*		
4	Percent Diverted	*0%*			
5	Average Number of Housing Units Per Convenience Center	*No data available*	*No data available*	*#WERT!*	
6	Total Container Capacity Per Housing Unit	*No data available*	*No data available*	*#WERT!*	
7	Annual Disposal Cost Per Container	*No data available*	*No data available*	*#WERT!*	
8	Annual Disposal Cost Per Pick-up Per Container	*No data available*	*No data available*	*#WERT!*	
9	Average Percent of Total Volume Capacity Accumulated Per Day	*No data available*	*No data available*	*#WERT!*	
10	Total Tonnage Disposed Per Personnel Devoted to Waste Management	*No data available*	*No data available*	*#WERT!*	

NOTES

1 Values from Table A-8.1

Table A-8.3. Waste Management Goals for Upcoming Year 2004

NOTES

1 Container volume reported as liters per person per week (L/pp-wk)

Row	Parameter	Goals From Previous Year	SWAR Calculated Values	IMA-EURO Goals for 2004 (1)
1	Total Disposal Cost Per Housing Unit	*not available*		
2	Total Solid Waste Generated (Tons)	*not available*	*22.436,22*	
3	Total Waste Management Unit Cost ($/Ton)	*not available*	*308,91*	
4	Total Rubbish Disposed (Tons)	*not available*	*6.450,20*	
5	Total Recycled (Tons)	*not available*	*15.986,02*	
6	Recycling rate (% of total waste generated)	*60*	*73,25*	
7	Rubbish Container Volume – Housing/Barracks	*not available*	*59.2 L/pp-wk*	30 L/pp-wk
8	Rubbish Container Volume – Office/Administrative	*not available*	*64.0 L/pp-wk*	10 L/pp-wk
9	Recyclables Container Volume – Housing/Barracks	*not available*	*32.9 L/pp-wk*	60 L/pp-wk
10	Recyclables Container Volume – Office/Administrative	*not available*	*34.0 L/pp-wk*	25 L/pp-wk

APPENDIX 9

SOLID WASTE COMPLIANCE PLAN

[NOTE TO PLAN WRITER: After reviewing this SWMP and the associated appendices, use the following form to identify deficiencies in the BSB solid waste system, plan corrective actions, and follow through]

Solid Waste Program Compliance Plan Form

ARLOC	Facility Number	Deficiency	Compliance Action	Completion Date	Cost Estimate	Project Number
Total BSB	Various	Door knobs at recycling island are difficult to operate	Replace by easy-to-operate handles			
GE52L	Various	At some recycling islands, door knobs can be operated from outside	Grip-thru prevention by signs as on others			
GE654	Various	Solid waste containers stored in unpaved areas	New recycing islands	Presently, under construction		
GE30J	Various	Solid waste containers stored in unpaved areas	Provide new or use existing hardstands			
Total BSB		Goals for containers per person and week not met				
GE654	Various	Convinience centers not fenced, gated or lockable	New recycing islands	Presently, under construction		
GE12F	Various	Convinience centers not fenced, gated or lockable		2009		
GE33J	Various	Convinience centers not fenced, gated or lockable		2009		
GE34G	Bldg. 3608	Convinience centers not fenced, gated or lockable		2009		
GE34J	Bldgs. 3962, 3983, 3980	Convinience centers not fenced, gated or lockable		2009		

ARLOC	Facility Number	Deficiency	Compliance Action	Completion Date	Cost Estimate	Project Number
GE45D	Bldg 4350	Convinience centers not fenced, gated or lockable		2009		
GE658	Bldgs 104, 3854	Convinience centers not fenced, gated or lockable		2009		
GE76P	Bldgs 1000	Convinience centers not fenced, gated or lockable		2009		
GE846	Various	Convinience centers not fenced, gated or lockable		2009		
GE30J	Bldg. 7859	Uncontrolled dumping of bulk waste				
GE34J	Bldg. 3962	Uncontrolled dumping of bulk waste				

APPENDIX 10

PREPARATION OF RECOMMENDATIONS

[NOTE TO PLAN WRITER: The following worksheets are provided to help you to make recommendations for improving the operation and efficiency of your solid waste programs.]

A-10.1 ANALYZING THE PROBLEMS

Table A-10.1 is provided to help identify the root cause of potential waste management issues encountered at your BSB.

Table A-10.1. Issues and Potential Causes

Issues	Potential Cause
1 Total disposal cost per housing unit is higher than USAREUR BSB average.	1. Outside cause, such as required contract with local government that is higher than average. 2. Container average percent full at time of pick-up significantly lower than average. 3. Number of personnel devoted to waste management higher than average. 4. Operation of a waste processing or disposal facility. 5. Waste management system more comprehensive than average.
2. Total tonnage disposal per housing unit significantly higher or lower than BSB average.	1. Problem with data collection. 2. Significant waste generators incorporated into residential waste flow. 3. Lack of recycling education for residents on BSB.
3. Total tonnage diverted per housing unit less than BSB average.	1. Problem with data collection. 2. Recycling / reduction program less comprehensive than average program. 3. Lack of recycling education for residents in BSB.
4. Percent diverted is less than BSB average.	1. Problem with data collection. 2. Recycling / reduction program less comprehensive than average program. 3. Lack of recycling education for residents in BSB.
5. Average number of housing units per convenience center is higher or lower than BSB average.	Refer to this number as an indicator if you are experiencing the following problems: 1. Disposal costs are higher than average per household. 2. Diversion rates are lower than average. 3. There is a litter problem on the BSB.
6. Total container capacity per housing unit is higher or lower than BSB average.	This number is primarily an indicator similar to above. In addition to the above problems, also look to this number if you are experiencing waste overflow at the convenience centers.
7. Annual Disposal Cost per Container is higher than BSB average.	1. Outside costs based upon contract. 2. Fewer households per convenience center than average. 3. Larger diversity of container types than average. 4. Compartmentalized multi-use containers where one compartment fills quickly and requires pick-up, while the other compartments are nearly empty. 5. Convenience centers are placed such that some are far more utilized than others.

Table A-10.1. Issues and Potential Causes

Issues	Potential Cause
8. Average Percent of Total Volume Capacity Accumulated per Day is higher or lower than BSB average.	This number is primarily an indicator. Refer to it if you are experiencing the following problems: 1. Annual disposal cost per container is higher than average. 2. Littering problem on BSB. 3. Trash overflow problem at the convenience centers. 4. Diversion rates lower than average.
9. Container average percent full at time of pick-up is higher or lower than BSB average.	1. Problem with data collection. 2. Fewer or more households per convenience center than average. 3. Larger or smaller diversity of container types than average. 4. Compartmentalized multi-use containers, where one compartment fills quickly and requires pick-up while the other compartments remain nearly empty.
10. Average Time between pick-ups is higher or lower than BSB average.	This number is primarily an indicator. Refer to it if you are experiencing the following problems: 1. Disposal cost per housing unit is higher than average. 2. Trash overflow problem at the convenience centers.
11. Total Disposal cost per personnel devoted to waste management is higher than BSB average.	1. BSB provides more or fewer services than average. For example, a BSB where the contract with the local government has the local government providing all pick-up, hauling, and disposal services will have a higher cost per personnel than a BSB where many of those services are provided on base. 2. Underutilization of available personnel. 3. Pick-ups per container higher than BSB average. 4. Average time between pick-ups lower than BSB average.
12. Total Tonnage Disposed Per Personnel is higher or lower than BSB average.	1. BSB provides more or fewer services than average. 2. Under or Over-utilization of available personnel. 3. Pick-ups per container higher or lower than BSB average. 4. Average time between pick-ups higher or lower than BSB average.

A-10.2 ANALYSIS OF DATA

[NOTE TO PLAN WRITER: Use the results of your parameter analysis in Appendix 8 to prepare the following numbers, which can be used to formulate your recommendations. This table is a very simplified approach to analyzing how much you are paying on average if you are providing a higher than average quality recycling/diversion program at added expense, and getting an increased diversion rate from it.]

Table A-10.2. Determination of Comparative Costs for Increased Diversion Rates

Row	Description	Number Result	Comments
1	BSB Disposal Cost Per Housing Unit versus USAREUR average		Subtract USAREUR BSB average from BSB Disposal cost
2	Tonnage Diverted Per Housing Unit versus USAREUR average		Subtract USAREUR BSB average from BSB tonnage
3	Calculate Overall Cost Per Ton handled		Divide Total Disposal Cost Per Housing Unit by Total Tonnage Disposed Per Housing Unit for your BSB
4	Estimated Cost Per Ton for Additional Diversion over Average		Result in Row 1 divided by Result in Row 2.

A-10.3 POTENTIAL RECOMMENDATIONS FOR IDENTIFIED ISSUES

[NOTE TO PLAN WRITER: Utilize the previous two tables to determine areas where your system needs improvement. The following table gives a partial listing of recommendations that may assist in this improvement.]

Table A-10.3. Recommendations for Solid Waste Program Improvements

Recognized Problem	Possible Recommendations
1. Required contract with local government has higher than average costs	1. Re-negotiate the contract. 2. Revise goals to reflect higher costs.
2. Container average percent full at time of pick-up significantly lower than average.	1. Analyze number and location of convenience centers to see if certain centers are getting more utilization than others. If so, relocate or reduce number of centers. 2. Analyze total number of containers to see if they can be reduced. 3. Analyze diversity of containers to see if you are providing too many specific options. May want to reduce number of different types of containers. 4. Analyze compartmentalized multi-use containers to see if one compartment is filling more rapidly than the others and recommend changing from these types of containers or changing the uses of the compartments.
3. Operation of a waste processing or disposal facility is causing higher than average costs	Consider closure of the facility

Table A-10.3. Recommendations for Solid Waste Program Improvements

Recognized Problem	Possible Recommendations
4. Operation of a waste management system that is more comprehensive than average is causing higher than average costs	Review Table A-10.2 and determine if the increased benefit of the system is worth the increased cost.
5. Significant waste generators are incorporated into the residential waste flow	Revise data collection process to separate the non-residential waste stream.
6. Diversion rate is lower than average	1. Provide additional recycling and diversion programs. Use the listing provided within the SWMP to choose the ones that are best suited to your BSB. 2. Compare educational programs with surrounding BSB's and determine if additional education is called for. 3. Analyze location and number of convenience centers to determine if additional centers might increase recycling participation. 4. Check waste stream characterization study to determine if rubbish has a high percentage of recyclables and compostables to determine if more education is in order.
7. Litter Problem	1. Analyze location and number of convenience centers to see if there are units with limited service. If so, add or relocate as necessary. 2. Analyze volume of centers to determine if there is sufficient volume to avoid overflows of waste between pick-ups. If not, add containers or increase the number of pick-ups. 3. Check maintenance of convenience centers. If they are uninviting and ill maintained, it may be decreasing use.
8. Personnel are underutilized compared to BSB averages	1. Decrease personnel assigned to waste management. 2. Provide additional services if required by the recommendations of the SWMP. 3. Share personnel with other departments.
9. Average Cost Per Household is higher than BSB average	1. Reduce number of convenience centers. 2. Reduce number of containers. 3. Change types of containers.
10. Cost Per Ton for Additional Diversion Over Average developed in Table A-10.2 is significantly higher than cost per ton for total tonnage	Review recycling and diversion program to see if items can be cut or modified for cost effectiveness.